Name _____ Date _____

LESSON 6.2

Practice C

For use with pages 420–427

Answers

Simplify the expression using the properties of radicals and rational exponents.

1. $(4^{2/3} \cdot 5^{3/4})^3$ $16 \times 5^{\frac{9}{4}}$
2. $(3^{3/2} \cdot 3^3)^{1/3}$ $3^{\frac{3}{2}}$
3. $((7^{2/3})^{3/5})^3$ $7^{\frac{6}{5}}$
4. $\left(\frac{5^2}{5^{7/2}}\right)^{-1/3}$ $5^{\frac{1}{2}}$
5. $\left(\frac{16^{1/3}}{2^{1/3}}\right)^2$ 4
6. $\sqrt[4]{\sqrt[3]{\sqrt{6}}}$ $\sqrt[24]{6}$
7. $\sqrt{\frac{\sqrt{32}}{\sqrt{72}}}$ $\frac{\sqrt{6}}{3}$
8. $\sqrt[5]{(3^3)^2 \cdot (3^4)^2}$ $9\sqrt[5]{81}$
9. $\frac{\sqrt{\frac{5}{7}} \cdot \sqrt{\frac{4}{5}}}{\sqrt{10}}$ $\frac{\sqrt{70}}{35}$

Simplify the expression. Assume all variables are positive.

10. $x^{\sqrt{3}} \cdot x^{\sqrt{12}}$ $x^{3\sqrt{3}}$
11. $\sqrt[4]{\frac{x^{17}}{y^8}}$ $\frac{x^4\sqrt[4]{x}}{y^2}$
12. $\left(\frac{x^{1/4}}{x^{1/2}}\right)^{-1}$ $x^{\frac{1}{4}}$
13. $\frac{x^{4/3}y^{7/6}}{xy}$ $x^{\frac{1}{3}}y^{\frac{1}{6}}$
14. $\left(\frac{2x^3y^{2/3}}{x^{5/3}y^{3/5}z}\right)^3$ $\frac{8x^4y^{\frac{1}{5}}}{z^3}$
15. $\left(\frac{xy^2}{3y^{4/3}z^{1/2}}\right)^{-1/2}$ $\frac{\sqrt{3}\,z^{\frac{1}{4}}}{x^{\frac{1}{2}}y^{\frac{1}{3}}}$
16. $\left(\frac{(12xz^2)^{1/2}}{(3y^3z)^{1/2}}\right)^{-3}$ $\frac{y^{\frac{9}{2}}}{8x^{\frac{3}{2}}z^{\frac{3}{2}}}$
17. $\sqrt[4]{(3x^3)^3(3x^2)^5}$ $9x^4\sqrt[4]{x^3}$
18. $\sqrt[3]{\sqrt[5]{x}} \cdot \sqrt{\sqrt[4]{x}}$ $x^{\frac{23}{120}}$

Perform the indicated operation. Assume all variables are positive.

19. $\sqrt{(10\sqrt{3} - 6\sqrt{3})}$ $2\sqrt[4]{3}$
20. $2x\sqrt[3]{x^4yz^5} + \sqrt[3]{x^7yz^5}$ $3x^2z\sqrt[3]{xyz^2}$
21. $\sqrt{\sqrt[4]{16x} - \sqrt[4]{x}}$ $\sqrt[8]{x}$
22. $\sqrt[3]{\frac{2x}{5} + \sqrt{\frac{x}{25}}}$ $\frac{\sqrt[3]{50x + 25\sqrt{x}}}{5}$
23. $\sqrt[3]{8x} + \sqrt[6]{x^2} - \sqrt[9]{x^3}$ $2\sqrt[3]{x}$
24. $\sqrt{xyz^2}\sqrt{9x^3z}\sqrt{x} + x\sqrt{yz}\sqrt{x^3z^2}$ $4x^2z\sqrt{xyz}$

25. **Circumference** The equatorial circumference of the Moon is 1.09×10^4 kilometers. One kilometer is equivalent to 3.94×10^4 inches. What is the equatorial circumference of the Moon in inches? 4.29×10^8 in

26. **Bowling Ball** A bowling ball is submerged in a tub of water. As a result, a total of 333 cubic inches of water is displaced. Use the formula for the volume of a sphere to find the radius of the bowling ball. 4.3 in

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